Mogalraj Kushal Dath

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TECHNICAL SKILLS

Languages : Python, C/C++, SQL(MySQL), HTML, MATLAB, Java
Frameworks : TensorFlow, PyTorch, Scikit-learn, Keras
Technologies : Machine Learning, Deep Learning (CNN's, RNN's, GAN's), NLP (NLTK), Computer Vision
Development Tools : Jupyter Notebook, Anaconda, Google Colaboratory, Spyder, VS code
Others : Model Training, Model Development, Model Evaluation and Optimization, Debugging

EXPERIENCE

AI Developer and Machine Learning Engineer (Full Time) | TECH PARAMOUNT| Hitech city, Hyderabad July 2024 – Sept 2024

- Developed and deployed a real-time face recognition and tracking system for detecting and tracking Unauthorized presence in the premises using IP cameras and leveraging multithreading to optimize frame processing and dynamic face detection with minimal latency.
- Designed and implemented an AI-powered chatbot utilizing LLMs, Lang Chain, and OpenAI, capable of understanding natural language queries and generating SQL queries to retrieve data from custom databases for real-time, dynamic user responses.
- Led the end-to-end development of multiple AI modules, including MLOps, testing, model architecture design, and cloud deployment using AWS, creating scalable, production-ready systems with a focus on dynamic programming and cost-efficiency.

Head Postgraduate Researcher (Research Link) | LPU Laboratories | Jalandhar, Punjab June 2022 – May 2023

- Collaborated with Professor Nahida Nazir to design and refine a cost-effective deep learning model tailored specifically for malaria classification and diagnosis in resource-limited areas.
- Integrated Median Blur and Otsu's Thresholding (MBOT) to construct an appropriate image processing technique for enhancing malaria RBC image data. Subsequently, I utilized GAN for data augmentation to enhance model precision.
- Evaluations and findings indicate that the VGG model, combined with the MBOT technique, achieves 98.46% precision, surpassing any other existing models reported in a journal research paper at IJRITCC.

EDUCATION

Lovely Professional University	**M.TECH in Machine Learning and AI** | CGPA: 8.76	August 2021 – June 2023
Lovely Professional University	**B.TECH in Computer Science and Engineering** | CGPA: 7.6	August 2016 – May 2020

PROJECTS

Malaria Parasite Detection | Deep Learning, CNN, Model Training, TensorFlow **(December 2022)**

- The project aimed to classify human blood smear images as either malaria-parasite-infected or healthy using deep learning algorithms.
- Three CNN models (BaseCNN, ResNet50, VGG19) were employed, deployed on the dataset, and compared based on accuracy and false-positive metrics to determine the best-performing model.
- Experimentation revealed that VGG19 outperformed other active models with a 92% accuracy rate and a low loss rate of 0.23. However, Base CNN exhibited a 25% faster performance than VGG19. Users can choose their preferred model based on specific requirements. VGG19 was used to assess model predictability in the project.

Image Caption Generator | NLP, NLTK, RNN **(November 2022)**

- The project aims to develop an image caption generator model using the Flickr 8k dataset, emphasizing accurate and relevant image descriptions.
- A model was developed by integrating CNN and LSTM neural networks. CNN extracts features from the image, while LSTM generates descriptions from the extracted information. At the final stage, the integrated model achieved about 76% accuracy with only a 1.25 loss rate.
- The model addresses the need for precise captions and simplifies Search Engine Optimization (SEO) tasks.

Image-Based Watershed Segmentation | Image Segmentation, Computer Vision, Model Configuration **(February 2020)**

- The primary objective of this project is to explore computer vision technologies, particularly in the realm of image processing, where image segmentation plays a crucial role. The project particularly focuses on watershed segmentation within the region-based segmentation approach.
- This method decomposes the image and assigns pixels to distinct regions or watersheds to detect edges, which is widely helpful in fields like medical data visualization.

ACHIEVEMENTS

Competitive Programming | Lovely Professional University -

- Awarded for participating in a 24-hour Tech-a-Thon coding competition in September 2022
- Awarded for Participating in GEEK FIESTA 2019 in November 2019

PUBLICATIONS

	Date of Publication
(Journal Papers in Scopus)	
❖ Malarial Diagnosis with Deep Learning and Image Processing Approaches (Paper Link)	17 May 2023
(Conference Papers in IEEE)	-
❖ Diagnosing malaria with AI and image processing (Paper Link)	10 May 2023
❖ Basic design for the implementation of an automatic surveillance system on helmet detection (Paper Link)	17 March 2023